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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,764	02/18/2004	Yun-Wen Lee	0941-0917P	1610

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EXAMINER	
SIEDLER, DOROTHY S	
ART UNIT	**PAPER NUMBER**
2626	

NOTIFICATION DATE	DELIVERY MODE
02/12/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/779,764	LEE, YUN-WEN	
	Examiner	Art Unit	
	Dorothy Sarah Siedler	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 8-13 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by ***D'hoore*** (6,085,160).

1. As per claims 1 and 9, ***D'hoore*** discloses a system for multi-lingual speech recognition, comprising:

a speech modeling engine, receiving and transferring a mixed multi-lingual speech signal into a plurality of speech features (column 2 lines 7-13 and column 3 lines 34-40);

a speech search engine, coupled to the speech modeling engine, receiving the speech features, and locating and comparing a plurality of candidate data sets corresponding to the speech features to find match probability of a plurality of candidate speech models of the candidate data sets (column 4 lines 42-45, *feature vectors are compared to acoustic models to determine the best match*); and a

decision reaction engine, coupled to the speech search engine, selecting a plurality of resulting speech models corresponding to the speech features according to the match probability from the candidate speech models to generates a speech command (column 4 lines 42-45, *feature vectors are compared to acoustic models to determine the best match*).

2. As per claims 2 and 10, ***D'hoore*** discloses the system as claimed in claims 1 and 9, wherein the speech models are characterized by diphone models (column 3 lines 24-25).

3. As per claims 3 and 11, ***D'hoore*** discloses the system as claimed in claims 1 and 9, wherein the speech searching engine locates and compares the candidate data sets by referring a multi-lingual model database (column 3 lines 4-15 and column 4 lines 42-45, *feature vectors are compared to acoustic models to determine the best match, where the database of acoustic models contains speech from several languages*).

4. As per claims 4 and 12, ***D'hoore*** discloses the system as claimed in claims 3 and 11, wherein the multi-lingual model database comprises multi-lingual context-speech mapping data column 4 line 63 - column 5 line 14, *context dependent acoustic models are trained and used for recognition*).

5. As per claims 8 and 17, ***D'hoore*** discloses the system as claimed in claims 1 and 9, wherein the speech search engine locates and compares the candidate data sets, further referring the connecting sequences of the speech features and a speech rule database (column 3 lines 3-29, *the recognizer performs speech recognition using the biphone acoustic models (connecting sequences) and a language model (speech rule database).*

6. As per claim 14, ***D'hoore*** discloses the method as claimed in claim 13, wherein selection and combination further comprises the steps of: fixing left contexts of the multi-lingual baseforms and mapping right contexts of the multi-lingual baseforms to obtain a mapping result; fixing right context and mapping the left contexts of the multi-lingual baseforms to obtain the mapping result if the right contexts of the multi-lingual baseforms mapping fails; and obtaining the multi-lingual context-speech mapping data according to the mapping result (column 4 line 63 – column 5 line 14, *context dependent biphone acoustic models are trained and used for recognition. Since the acoustic models used are biphone models, it is inherent that left and right context and mapping is used*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***D'hoore*** in view of ***Burns*** (5,454,106).

7. ***D'hoore*** discloses the system as claimed in claim 4, further comprising:

a multi-lingual baseform mapping engine, comparing a plurality of multi-lingual inputs to obtain a plurality of multi-lingual baseforms (column 3 lines 9-18, *the system recognizes phonemes or phoneme like units, therefore it is inherent that the system first performs tokenization, or obtains baseforms*); and

a cross-lingual diphone model generation engine, coupled to the multi-lingual baseform mapping engine, selecting and combining the multi-lingual baseforms to generate the multi-lingual context-speech mapping data (column 3 lines 22-25 and column 4 line 63 – column 5 line 14, *context dependent biphone acoustic models are trained and used for recognition*).

However, ***D'hoore*** does not disclose comparing a plurality of multi-lingual query commands to obtain a plurality of multi-lingual baseforms. ***Burns*** discloses inputting query commands to a speech recognizer, which are then sent to be scanned by a tokenizer (column 4 lines 20-29). ***Burns*** discloses a system that enables a user to retrieve information from a database using natural language queries (column 3 lines 10-15).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to compare a plurality of multi-lingual query commands to obtain a plurality of multi-lingual baseforms in ***D'hoore***, since one or ordinary skill in the art has good reason to pursue the options within his or her technical grasp in order to achieve the predictable result of producing a multi-lingual speech recognition system optimized for a variety of recognition tasks.

Claims 6,7,15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***D'hoore*** in view of ***Waibel*** ("Interactive Translation of Conversational Speech" IEEE 1996).

8. As per claims 6 and 15, ***D'hoore*** discloses the system as claimed in claims 3 and 11, however ***D'hoore*** does not disclose wherein the multi-lingual model database comprises a plurality of multi-lingual anti-models. ***Waibel*** discloses a system for speech

recognition which uses garbage models to model nonstationary noises (page 44, second paragraph). These garbage models, also known as anti-models, are used to model common nonspeech noises, such as coughs and lip-smacking, and non human noises, such as a door slams and ringing telephones.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use anti-models in ***D'hoore***, since one of ordinary skill in the art has good reason to pursue the options within his of her technical grasp in order to achieve the predictable result of removing non-speech and background noises, thus improving the overall recognition accuracy.

9. As per claims 7 and 16, ***D'hoore*** in view of ***Waibel*** discloses the system as claimed in claims 6 and 15, but ***D'hoore*** does not disclose at least one uni-lingual anti-model generation engine, receiving a plurality of multi-lingual query commands to generate a plurality of uni-lingual anti-models corresponding to specific languages; and an anti-model combination engine, coupled to the uni-lingual anti-model generation engine, calculating the uni-lingual anti-models to generate the multi-lingual anti-models. However, ***D'hoore*** does disclose receiving multi-lingual speech input and training multi-lingual acoustic models (column 4 line 63- column 5 line 14). In addition, ***Waibel*** discloses a system for speech recognition which uses garbage models to model non-stationary noises (page 44, second paragraph). These garbage models, also known as

anti-models, are used to model common non-speech noises, such as coughs and lip-smacking, and non human noises, such as a door slams and ringing telephones.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to receiving a plurality of multi-lingual query commands to generate a plurality of uni-lingual anti-models corresponding to specific languages, and use an anti-model combination engine, coupled to the uni-lingual anti-model generation engine, to calculate the uni-lingual anti-models to generate the multi-lingual anti-models in ***D'hoore***, since one of ordinary skill in the art has good reason to pursue the options within his of her technical grasp in order to achieve the predictable result of removing non-speech and background noises, thus improving the overall recognition accuracy.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see the PTO-892 form.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dorothy Sarah Siedler whose telephone number is 571-270-1067. The examiner can normally be reached on Mon-Thur 9:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSS

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER